MASTERY PROFILER

Link: www.masteryprofiler.com

Category: usability/practicality

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1. OUR GOAL

Our goal was to create a tool for players to track their Mastery Progress and Chests Earned, and easily and intuitively show their lane mastery in League. Being able to visualize both the distribution of the mastery per lane and the player's improvement, will push users to master all roles and champions, and help them get stronger in their weaker areas. By simply copy-pasting the link, players can even share their progress and lane mastery with their friends and teammates.

2. DESIGN OVERVIEW

Our entry creates a profile of the player's Mastery that provides both general and detailed information in a user-friendly website. The profile is divided into three main sections: summary, lanes, and champions.

The <u>Summary</u> provides a general overview of the player's mastery progress by displaying overall grades (based on averaging champions points), mastery score, best lane, number of champions mastered and chests earned, favorite champion, and even suggestions on who to master next or unlock the next chest with.

The <u>Lanes</u> section of the profile displays two graphs. The first one (column chart) shows how the player's mastery is distributed over all the lanes. When a lane is selected, players can see in the second graph (donut chart) the percentage of each mastery level from that lane. When a mastery level is selected from the donut chart, the table in the <u>Champions</u> section displays the champions from that lane at that mastery level. Finally, when a lane and/or mastery level are unselected, the donut chart and the <u>Champions</u> section are updated to display all lanes and/or all mastery levels.

The <u>Champions</u> section is a data table that displays rows of champions based on the selection from the two graphs above it. While the table's main job is to indicate what champions belong to the sections of the graphs selected, each row gives a general feel of its champion's mastery progress, including a grade based on the amount of champion points earned.

3. USERS: HOW THE WEBSITE WORKS

By going to the website www.masteryprofiler.com, any user can input a Summoner Name and its corresponding Region on the top-right section of the page. If both fields are valid, the page will take a couple of seconds to load the information and display it nicely. Notice that if the Summoner does not

have any Mastery data, an error will occur.

Once the data has finished loading, all the data will be broken down into three sections, <u>Summary</u>, <u>Lanes</u>, and <u>Champions</u>, each one below the other.

1. The <u>Summary</u> section consists of three subsections: *Summoner Profile*, *Champions Mastered*, and *Chests Earned*. The background is picked at random from the Summoner's pool of Mastery Level 5 champions.

    a. *Summoner Profile* includes the Summoner Name, Ranking (Division and Tier), the corresponding Rank icon, an overall grade*, the Mastery Score, the average Mastery Level, the best lane**, the best lane grade, the Mastery Score corresponding to the best lane, the average Mastery Level corresponding to the best lane, and finally the Favorite champion (the one with the highest Champion Points).

    * **Our Grade System**: The overall grade and the best lane grades are calculated using the Champion Points, and averaging them. The following is the chart:

    > points == 0 = D-
    > points > 0 and points < 500 = D
    > points >= 500 and points < 1100 = D+
    > points >= 1100 and points < 1800 = C-
    > points >= 1800 and points < 3600 = C
    > points >= 3600 and points < 6000 = C+
    > points >= 6000 and points < 7650 = B-
    > points >= 7650 and points < 9550 = B
    > points >= 9550 and points < 12600 = B+
    > points >= 12600 and points < 16000 = A-
    > points >= 16000 and points < 21600 = A
    > points >= 21600 and points < 33000 = A+
    > points >= 33000 and points < 63000 = S-
    > points >= 63000 and points < 102000 = S
    > points >= 102000 = S+

    ** The best lane is calculated by the lane with the highest Champion Points average

    b. *Champions Mastered* includes a progress bar indicating the total amount of champions at Mastery Level 5, as well as 5 more progress bars (one for each of the 5 lanes in League: top, jungle, mid, support, and adc), and an icon of the next suggested champion to be mastered (aka the champion closest to reaching Mastery Level 5). Next to each progress bar is a count for how many champions have been mastered in that lane. Check the **4. DEVELOPERS: HOW WE DID IT** section of this document to see how we came up with each group of champions.

    c. *Chests Earned* is the equivalent of the *Champions Mastered* subsection, except it displays how many chests have been earned over the season. Also, instead of displaying an icon for the closest to champion to Mastery Level 5, this subsection displays a

suggestion of the next champion to earn a chest with. This suggestion is based on the champion with the highest Champion Points who did not earn a chest yet.

2. The Lanes section consists of two graphs:
   a. *Stacked Column Chart* is on the left, and it displays, like title says, the Mastery Distribution per Lane. Each column represents one of the five lanes, and each color represents the Mastery Level. The height of each colored section is determined by the number of champions with that Mastery Level. Below the graph there are grades that correspond to the average of the Champion Points for each champion in that lane (as explained above). Notice that each column (aka lane) are clickable, which selects that lane and filters what's shown in both the *Donut Chart* and the Champions section.
   b. *Donut Chart* represents the percentage of each mastery level from 0-5 (notice the 0!). When a column (lane) from the *Stacked Column Chart* is selected, the *Donut Chart* displays the percentages that correspond to that lane. If no columns are selected, the *Donut Chart* displays percentages for all champions. Just like users could select a lane from the *Stacked Column Chart*, similarly they can click and select a colored 'slice' of the donut (aka Mastery Level), which will further filter the data displayed in the third and final section of the website, the Champions.

3. The Champions section is a data table that displays rows of champions with 7 columns: Icon, Champion Name, Chest (earned or not), Grade (from our grade system), Mastery Level, Champion Points, and a progress bar displaying points to the next Mastery Level. By having a Lane and/or Mastery Level selected from the two graphs in the Lanes section, the content of this table will be filtered accordingly. Notice that each column in the table is sortable, both ascending and descending.

4. OUR TRAIN OF THOUGHT

We started off discussing what kind of useful and new information we could display in the website. Things started clicking for us when we talked about 'earned chests', so the idea of keeping track of a Summoner's progress came to life. Soon enough we started sketching ideas on keeping track of both Chests and Mastery Progress. Once we started discussing how to display this data, we really fell in love with the idea of dividing it by lane. Not only did we think this would be more visual than just a Mastery Score number, but it also dawned on us that this could definitely be used as **a tool to show how good a player is in a specific lane**. For this reason, we decided to make our website linkable, to make sure that people could share their page in league chats or wherever! From there on, the Mastery and Chests progress became almost secondary, but we still really liked it, so we decided to divide the website into three main sections. The first one would contain an overview of the player's information and progress, while the main section would focus on the Summoner's Mastery of each lane. The third section is meant to display the details of what users see in the graph.

5. DEVELOPERS: HOW WE DID IT

First of all, Merricat is the technical guy, and Osbourne Cox is more of the artist. While we both designed the project, each of us had different roles in the creation of the website. Neither of us are really web-

developers, so we had to learn a lot of CSS, JavaScript and jQuery in the first couple of days of the contest in order to achieve exactly what we wanted for this project.

As far as the programming goes, we host and manage the site on our home "server", and we got a new domain name for literally one dollar. We used Apache to host, PHP for the back-end layer, JavaScript + jQuery for the front-end. The website is mostly just structured in HTML, and gets populated with data with jQuery. There's only one JS file we worked on, called "main.js", so that's the file that handles all the data.

Once the site loads for the first time, JS parses the URL and checks if there's already a summoner name and region in it. If there are, it sends an operation request to the "api-caller.php" file (also, my one and only php file), otherwise HTML waits to read the user input. The php file then reads the operation code, the summoner name, and the region with the $_GET[] method, and along with the private API KEY, it sends a request to the Riot API to get back the summonerId. JS reads it back as json, and if there are no errors to display client-side, proceeds to call back the php file for the summoner Rank data (division and tier). Again, if there are no errors, JS proceeds to call back the php file one last time for the Mastery Data. This is then read back as json by JS, which stores all the data in an array of objects.

JS holds one big associative array called *m_data*, which contains multiple associative arrays: *constants*, *summoner*, *champions*, *stacked*, and *selection*. *Constants*'s data is partly hard-coded (to create a custom array of championIds, divided by lanes*) and partly dynamically allocated (a championId-to-Name-and-IconName map, created from the static API call "http://ddragon.leagueoflegends.com/cdn/6.9.1/data/en_US/champion.json"). *Summoner* contains the basic info about the Summoner in question (name, id, etc.). *Champions* contains all raw data from the Mastery API endpoint: an array of champions, with data like championId, championPoints, masteryLevel, chestEarned, etc.

Once we got all the correct mastery data, we started filling the *Stacked* array with championIds sorted by mastery level, sorted by lane so it would look something like this: *m_data["stacked"][lane][masteryLevel]*. This was a great way to populate the *Stacked Column Chart* in the Lanes section of the website.

We then used the Highcharts API and plugins to create custom graphs with the data. We created a basic functional chart on their website at first, and learned their API later to get the exactly the look we wanted. In the JS file, after we create the "stacked" data we then create the column chart itself, passing in the data. Then we move onto creating the Donut chart by iterating through the same data. Finally the Champions table gets populated. Notice that the charts and table get refreshed whenever the user selects a new Lane or Mastery Level, which are stored inside *m_data["selection"][lane]* and *m_data["selection"][level]*, so we had to create a custom Refresh() function that grabs the new data and redraws the graphs and table.

JS also handled some API calls, those that didn't need an API key: the aforementioned "champion.json", all the icons (except the earned chest icon, which we borrowed from the game installation folder), and the champion splash art in the background of the Summary section. We also used a jQueryUI plugin for the look of the Champions data table, and referenced their API (https://www.datatables.net/reference/api/) to sort and modify the table how we wanted.

* Most of the interesting stuff on our website comes from separating the data into the five lanes/roles of the game. We therefore had to choose how we were going to come up with a pool of champions for each lane. We ended settling for something in between Riot's primary role for the champion and what the current meta of the game is (based on our game experiences and also other sites' statistics like Champion.gg's role rate). No Teemo adc, sorry :-)

6. STRUGGLES

1. Learning CSS well enough to place our content how we wanted, and to make it usable cross-browsers and at least somewhat friendly for mobile devices.
2. Learning JS and jQuery to dynamically create and modify content.
3. Learning all the APIs (Highcharts and DataTables) to get the control we wanted.
4. Understanding JS associative arrays and how to iterate through them properly.
5. HTML's DOM and SVG manipulation. While the Highcharts API helped with creating the charts' content, we still needed to interact with its elements by navigating through dynamic DOM content and modifying SVG attributes.

7. CONCLUSION

We're really excited about this project, and we think it has the potential to gain popularity as a quick way to both keep track of your Mastery progress and show off your lane skills. We specifically had to spend some time implementing a custom-url system so that users can copy-paste it to show their Mastery Profiler page.

We're looking into expanding the functionality of the website by including some features that we didn't have enough time for in this contest. Specifically, we started working on champions' secondary role, which would result in a *Basic View* (just showing charts filtered by primary role champions) and an *Advanced View* (which include secondary role champions). Teemo adc still has hope :-)